

Adjustable Fidelity Computational Aeroelasticity Procedure (AFCAP), Phase I

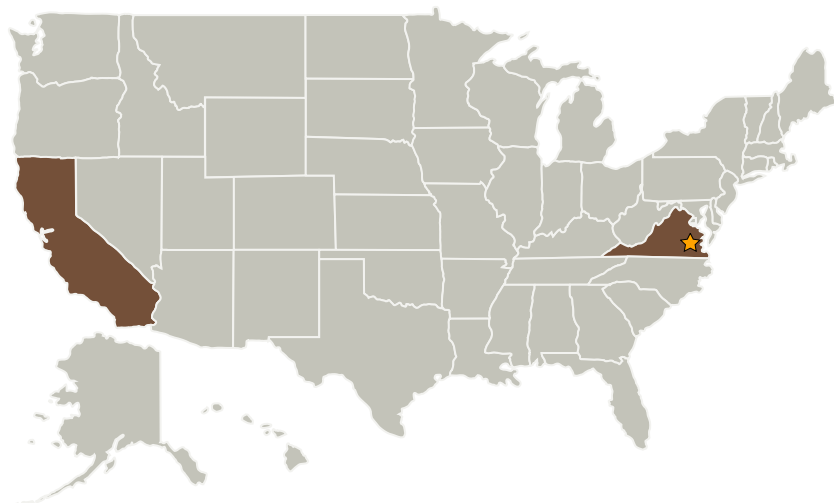
Completed Technology Project (2007 - 2007)



Project Introduction

NextGen proposes an approach to significantly enhance aeroelastic analysis capabilities over what is commonly available in linear analysis environments such as NASTANTM. The approach to accomplish this builds upon an existing software framework that allows the integration of varying-fidelity aerodynamic modeling capability with varying fidelity structural models. The approach utilizes inherently nonlinear aerodynamic predictions schemes that are incorporated into the aeroelastic solution strategy. Potentially large (geometrically nonlinear) structural deflections under the influence of nonlinear aerodynamic can be analyzed using the approach. Hierarchical levels of analysis capabilities are included, ranging from simple yet powerful empirical approaches to the complete coupling of high-order CFD codes and nonlinear structural models. An aeroservoelastic solution framework will be developed in Phase I resulting in a prototype nonlinear aeroelasticity method suitable for a proof-of-concept demonstration. The developed methods will be demonstrated on test cases of recent research interest, such as the Active Aeroelastic Wing (AAW) F/A-18 aircraft.

Primary U.S. Work Locations and Key Partners



Adjustable Fidelity
Computational Aeroelasticity
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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
NextGen Aeronautics, Inc.	Supporting Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB)	Torrance, California

Primary U.S. Work Locations

California	Virginia
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
 - └ TX15.1 Aerosciences
 - └ TX15.1.3 Aeroelasticity